

What is claimed is:

1. A bi-directional driving circuit of a liquid crystal display (LCD) panel having a plurality of blocks, each block comprising:

5 a first start pulse input terminal for receiving one of a start pulse and an output signal of a previous block; and

a second start pulse input terminal for receiving one of the start pulse and an output signal of a next block.

10 2. A bi-directional driving circuit of a liquid crystal display (LCD) panel having a plurality of blocks, each block outputting a signal, the bi-directional driving circuit comprising:

15 a first switching portion for switching a start pulse signal applied to an input terminal of a first block among the blocks and for switching an output signal of a previous block, which is to be applied to input terminals of the other blocks; and

20 a second switching portion for switching a start pulse signal applied to an input terminal of the last block and for switching an output signal of a previous block, which is to be applied to input terminals of the other blocks.

25 3. A bi-directional driving circuit of a liquid crystal display (LCD) panel having a plurality of blocks, each block comprising:

a first switching element having a source and a gate for receiving a start pulse;

a second switching element having a source connected to a drain of the first switching element and a gate for receiving a first clock signal is applied;

30 a third switching element having a source connected to a drain of the second switching element and a drain connected to a ground terminal Vss;

a fourth switching element having a source connected to a power source voltage terminal Vdd, a gate connected to a second clock signal, and a drain connected to a gate of the third switching element;

a fifth switching element having a source connected to the drain of the fourth switching element, a gate connected to the drain of the first switching element, and a drain connected to the Vss terminal;

a sixth switching element having a source connected to the second clock signal, a gate connected to the drain of the second switching element, and a drain connected to an output terminal;

a seventh switching element having a source connected to the output terminal, a gate connected to the drain of the fourth switching element, and a drain connected to the Vss terminal;

an eighth switching element having a source and a gate connected to an output terminal of a next block and a drain connected to the drain of the first switching element; and

a ninth switching element connected to the second switching element in parallel, having a gate connected to the second clock signal.

4. The bi-directional driving circuit of an LCD panel of claim 3, wherein each block further comprises:

a first capacitor connected between a contact node between the drain of the second switching element and the source of the third switching element and the Vss terminal;

a second capacitor connected between the gate of the sixth switching element and the Vss terminal;

a third capacitor connected between the gate of the sixth switching element and its drain; and

a fourth capacitor connected between the gate of the seventh switching element and the Vss terminal.

5 The bi-directional driving circuit of an LCD panel of claim 3, wherein the blocks include first to eighth blocks,

the first clock signal being applied to the source of the sixth switching element in the first and fifth blocks, the second clock signal in the second and sixth blocks, a third clock signal in the third and seventh blocks, and a fourth clock signal in the fourth and eighth blocks;

the third clock signal being applied to the gate of the fourth switching element in the first and fifth blocks, the fourth clock signal in the second and sixth blocks, the first clock signal in the third and seventh blocks, and the second clock signal in the fourth and eighth blocks;

the fourth clock signal being applied to the gate of the second switching element in the first and fifth blocks, the first clock signal in the second and sixth blocks, the second clock signal in the third and seventh blocks, and the third clock signal in the fourth and eighth blocks; and

the second clock signal being applied to the gate of the ninth switching element in the first and fifth blocks, the third clock signal in the second and sixth blocks, the fourth clock signal in the third and seventh blocks, and the first clock signal in the fourth and eighth blocks.

6. The bi-directional driving circuit of the LCD panel of claim 3, wherein an output signal of a previous block is applied to the gate and the source of the first switching element as a start pulse signal in the other blocks except for a first block, and the start pulse signal is applied to the eighth switching element of a last block.

7. The bi-directional driving circuit of the LCD panel of claim 3, wherein the gate of the fifth switching element is connected to the drain terminal of one of the second switching element and the ninth switching element.

5 8. The bi-directional driving circuit of the LCD panel of claim 3, wherein each block further includes:

a tenth switching element connected between the first switching element and the second switching element, for being switched depending on a gate voltage of the second switching element; and

an eleventh switching element connected between the eighth switching element and the second switching element, for being switched depending on a gate voltage of the ninth switching element.

9. The bi-directional driving circuit of the LCD panel of claim 8, wherein each block further includes:

first and second capacitors respectively connected between contact nodes and the ground terminal, the contact nodes being arranged between the first and tenth switching elements and between the tenth and second switching elements;

a third capacitor connected between a contact node arranged between the eight and eleventh switching elements and the ground terminal;

a fourth capacitor connected between the gate of the sixth switching element and the Vss terminal;

a fifth capacitor connected between the gate and the drain of the sixth switching element; and

a sixth capacitor connected between the gate of the seventh switching element and the Vss terminal.

10. The bi-directional driving circuit of the LCD panel of claim 3, wherein the respective switching elements are p-MOS transistors.

5 11. A bi-directional driving circuit of a liquid crystal display (LCD) panel having a plurality of blocks, each block comprising:

a first switching element having a source and a gate to which a start pulse is applied;

a third switching element having a source connected to a drain of the first switching element and a drain connected to a ground Vss terminal;

a fourth switching element having a source connected to a power source Vdd terminal, a gate connected to a first clock signal, and a drain connected to a gate of the third switching element;

a fifth switching element having a source connected to the drain of the fourth switching element, a gate connected to the source of the first switching element, and a drain connected to the Vss terminal;

a sixth switching element having a source connected to a second clock signal, a gate connected to the drain of the first switching element, and a drain connected to an output terminal;

a seventh switching element having a source connected to the output terminal, a gate connected to the drain of the fourth switching element, and a drain connected to the Vss terminal;

eighth switching elements for switching the start pulse VST applied to the gate and the source of the first switching element in a first block and for switching an output signal applied to the gate and the source of the first switching element in a next block, through an external forward control signal; and

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a ninth switching elements for switching the start pulse VST applied to the gate and the source of the first switching element in the last block and for switching an output signal applied to the gate and the source of the first switching element in a previous block, through an external backward control signal.

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12. The bi-directional driving circuit of an LCD panel of claim 11, wherein each block further includes:

a first capacitor connected between a contact node arranged between the first and third switching elements and a ground terminal Vss;

a second capacitor connected between the gate of the sixth switching element and the ground terminal;

a third capacitor connected between the gate of the sixth switching element and its drain; and

a fourth capacitor connected between the gate of the seventh switching element and the ground terminal Vss.

13. The bi-directional driving circuit of an LCD panel of claim 11, wherein the blocks include first to eighth blocks,

the first clock signal being applied to the source of the sixth switching element in the first and fifth blocks, the second clock signal in the second and sixth blocks, a third clock signal in the third and seventh blocks, and a fourth clock signal in the fourth and eighth blocks; and

the third clock signal being applied to the gate of the fourth switching element in the first and fifth blocks, the fourth clock signal in the second and sixth blocks, the first clock signal in the third and seventh blocks, and the second clock signal in the fourth and eighth blocks.

14. The bi-directional driving circuit of an LCD panel of claim 11, wherein each block further includes a second switching element connected between the first and third switching elements for being switched by another clock signal.

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15. The bi-directional driving circuit of an LCD panel of claim 14, the fourth clock signal being applied to the gate of the second switching element in the first and fifth blocks, the first clock signal in the second and sixth blocks, the second clock signal in the third and seventh blocks, and the third clock signal in the fourth and eighth blocks.

16. The bi-directional driving circuit of the LCD panel of claim 11, wherein an output signal of a previous block is applied to the gate and the source of the first switching element as a start pulse signal through the eighth switching element in the other blocks except for the first block, and an output signal of a next block is applied to the gate and the source of the first switching element as a start pulse signal through the ninth switching element in other blocks except for the last block.

17. The bi-directional driving circuit of the LCD panel of claim 11, wherein the respective switching elements are p-MOS transistors.

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